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(FILE 'HOME' ENTERED AT 19:32:19 ON 07 MAR 2003)

FILE 'REGISTRY' ENTERED AT 19:32:32 ON 07 MAR 2003

L1 1 S AMMONIA/CN
SEL NAME L1
FILE 'CA' ENTERED AT 19:33:00 ON 07 MAR 2003
L2 1327 S (L1 OR E1-8 OR AMMONIA OR NH3) (5A) (STORAGE OR STORING OR STORE OR
LOAD OR LOADING OR CONCENTRAT? OR RESERVE OR ADSOR? OR ABSOR?) (7A) (SCR
OR CATALY?)
L3 756298 S (STORAGE OR STORING OR STORE OR LOAD OR LOADING OR CONCENTRAT? OR
RESERVE OR ADSOR? OR ABSOR?) (7A) (DETECT? OR DETERMIN? OR MONITOR? OR
MEASUR? OR ASSAY? OR ANALY? OR ASSESS? OR TEST? OR ESTIMAT? OR
EVALUAT? OR EXAMIN? OR SENSE# OR SENSING OR PROBE# OR PROBING OR
QUANTIF? OR QUANTITAT?)
L4 311 S L2 AND L3
L5 126 S L4 AND (EXHAUST OR NOX OR DENOX OR NO OR NO2)
L6 15 S L2 (4A) (CAPACITY OR VOLUME OR STATUS)
L7 48 S L4 AND (FLUE OR DECOMPOS?)
L8 155 S L5-7

=> d bib,ab 1-155 l8

L8 ANSWER 16 OF 155 CA COPYRIGHT 2003 ACS
AN 134:75571 CA
TI Emission control system with a catalyst
IN Hammerle, Robert Henry; Adams, Karen Marie; Laing, Paul Matthew
PA Ford Global Technologies, Inc., USA
SO Eur. Pat. Appl., 8 pp.
PI EP 1069288 A2 20010117 EP 2000-305678 20000705
US 6295809 B1 20011002 US 1999-353294 19990712
PRAI US 1999-353294 A 19990712
AB The invention relates to a system and method for controlling ammonia
injection upstream of a selective redn. catalyst for use with an internal
combustion engine. A reductant injection control strategy for controlling
an amt. of nitrogen oxide reducing agent injected upstream of a selective
redn. catalyst uses an ammonia sensor located downstream of the catalyst.
An open loop injection quantity is first detd. based on operation
conditions. **Ammonia concn. detected** downstream of the **catalyst** is
controlled to a desired value, with the desired value based on catalyst
temp. and the open loop injection quantity.

L8 ANSWER 31 OF 155 CA COPYRIGHT 2003 ACS
AN 131:174150 CA
TI Control of an NOx-absorbing catalytic converter
IN Hahn, Hermann
PA Volkswagen Aktiengesellschaft, Germany
SO PCT Int. Appl., 15 pp.
PI WO 9943420 A1 19990902 WO 1999-EP864 19990210
US 6408615 B1 20020625 US 2000-641416 20000816
PRAI DE 1998-19808382 A 19980227
WO 1999-EP864 W 19990210
AB According to the invention, the end of a regeneration interval of an NOx
accumulating catalytic converter of an engine run on a lean mixt. is detd.
by detecting the end of the regeneration phase of the NOx accumulator by a
sensor having a cross-sensitivity for a penetrating **exhaust**-gas product
which exits from the catalytic converter at the end of the regeneration
phase. Reducing **exhaust**-gas components such as CO and NH3, which can be

detected by a cross-sensitive **NO_x** sensor, can be used as **exhaust-gas** products at the end of the regeneration phase. By knowing the end and beginning of a regeneration phase different control functions and various types of information can be deduced, including control of the completion of rich-mixt. engine operations, correction of the regeneration model in the engine management system and aging of the catalytic converter.

L8 ANSWER 39 OF 155 CA COPYRIGHT 2003 ACS

AN 128:196032 CA

TI Selective catalytic reduction of **NO** over commercial **DeNO_x**-catalysts: experimental determination of kinetic and thermodynamic parameters

AU Koebel, M.; Elsener, M.

CS Paul Scherrer Institute, Combustion Research, Villigen PSI, CH-5232, Switz.
SO Chemical Engineering Science (1998), 53(4), 657-669

AB The kinetic and thermodyn. parameters have been measured for three com. catalysts based on TiO₂-WO₃-V₂O₅ at temps. from 200 to 450° in the presence of water (5%) and oxygen (10%). At low temps., the first-order rate consts. strongly depend on **NO** concn.; this effect decreases with increasing temp. Therefore, a first-order rate law with respect to **NO** can only approx. describe the kinetic behavior of SCR catalysts. A much better description is possible by taking into consideration the adsorption of both NH₃ and **NO**. However, the relevant parameters are exptl. not accessible with a satisfactory degree of accuracy. At temps. above 350° the thermodyn. of **adsorption** of **SCR-active NH₃** could be studied under realistic **SCR-conditions**. In a similar way, detailed measurements below 300° allowed **detn.** of the thermodyn. of **NO adsorption**. **NH₃**, reactive in **SCR**, is strongly **adsorbed** (Had, **NH₃** ≈ -100 to -130 kJ/mol) and **NO** is weakly adsorbed (Had, **NO** ≈ -20 kJ/mol). Due to this, the temp. dependence of the resp. adsorption const. is strong for NH₃ but weak for **NO**. The obsd. adsorption of **NO** calls either for a reaction mechanism of the Langmuir-Hinshelwood or of the nitrosamidic intermediate type.

L8 ANSWER 43 OF 155 CA COPYRIGHT 2003 ACS

AN 126:320367 CA

TI NH₃ injection control: Availability of De-**NO_x** rate equations

AU Kondo, Kazuhiro; Akiyama, Masaki; Ichiki, Masayoshi

CS Hitachi Zosen Corp., Japan

SO Hitachi Zosen Giho (1997), 58(1), 37-42

LA Japanese

AB In advanced De-**NO_x** technol., more closely NH₃ injection control are required to keep De-**NO_x** efficiency higher than 95% and NH₃ slipping below 3 ppm. The investigation of the catalyst performance took place in 1995 on the De-**NO_x** catalyst "NOXNON 700", and rate equations of the De-**NO_x** reaction were established as one of the results of this investigations. These rate equations are adaptable both in steady state of reaction conditions and even in transient states where gas flow rate, temp., and **NO_x** concn. etc. fluctuates widely and rapidly. The development of an advanced NH₃ injection control system is becoming possible by **estg.** the distribution of **NO_x & NH₃ concn.** and the **NH₃ adsorption** in **catalyst** beds as the soln. to the above equations. In addn., the optimal reactor design is created by using the above estn. results.

L8 ANSWER 51 OF 155 CA COPYRIGHT 2003 ACS

AN 124:14186 CA

TI Photoacoustic system for NH₃ detection in a selective catalytic reactor

AU Pintus, N.; Carrer, I.; Del Corno, A.; Fiorina, L.; Zanzottera, E.

CS ENEL S.p.A., Centro Ricerca Termica, Pisa, 56123, Italy

SO Proceedings of SPIE-The International Society for Optical Engineering

(1995), 2506 (Air Pollution and Visibility Measurements), 22-8
AB A new instrument, specifically developed for **measuring NH3 concn.** at the inlet and outlet of an **SCR** reactor, is described; it is based on the photoacoustic technique and can perform an online and in situ n-point measurement grid. The major problem is the severe interference of CO2 combustion gas that absorbs at the same wavelength used for NH3, lowering the sensitivity of the technique. A ^{13}C CO2 tunable laser emitting at three wavelengths (λ_{onNH_3} , λ_{offNH_3} , λ_{onCO_2}) has been used in order to **evaluate** simultaneously the CO2 and NH3 **concn.** The integrated **measurements** have been done by a simple differential **absorption** technique by using a pyroelec. **detector**; the spatially resolved measurements have been carried out through the anal. of the acoustic wave generated by the laser beam and collected by four microphones perpendicularly disposed. Exptl. tests on a 35 MW industrial plant and comparison with traditional sampling methods are presented.

L8 ANSWER 58 OF 155 CA COPYRIGHT 2003 ACS

AN 122:63007 CA

TI Vanadia/titania catalysts for selective catalytic reduction of nitric oxide by ammonia. II. Studies of active sites and formulation of catalytic cycles

AU Topsoe, N. Y.; Dumesic, J. A.; Topsoe, H.

CS Haldor Topsoe Res. Labs., Lyngby, DK-2800, Den.

SO Journal of Catalysis (1995), 151(1), 241-52

AB The reaction mechanism and catalytic cycle for the selective catalytic redn. of **NO** by **NH3** over **V2O5/TiO2** catalysts was studied by in-situ online FTIR studies under steady-state conditions. Under all reaction conditions, a large concn. of **NH3** is adsorbed on both Lewis and Bronsted acid sites, whereas **no** significant amts. of adsorbed **NO** are adsorbed. The **catalytic** activity is related to the **NH3 adsorbed** on the Bronsted acid sites assocd. with **V5+-OH**. Surface **V:O** groups are involved in activation of the adsorbed **NH3** and are also found to play an important role in the catalytic cycle. The activation involves a transfer or a partial transfer of a **H** and reduced **V-OH** groups are produced. The **V5+:O** surface species are regenerated by oxidn. The results show that the catalytic cycle consists of both acid-base and redox reactions. The **NH3** adsorption is obsd. to be a fast equilibrated step under all the conditions studied but the other catalytically significant steps may shift depending on the reaction conditions. At high **O2** partial pressures, the rate is mainly **detd.** by the **concn.** of Bronsted acid sites and the **NO** partial pressure, whereas at low **O2** partial pressures, surface reoxidn. is slow and the rate becomes dependent on the concn. of **V5+:O** groups.

L8 ANSWER 61 OF 155 CA COPYRIGHT 2003 ACS

AN 119:277852 CA

TI Selective catalytic reduction of **exhaust** gases for nitrogen oxides removal, especially for diesel **exhaust**

IN Daudel, Helmut; Marquardt, Klaus Juergen; Gaertner, Uwe

PA Daimler-Benz A.-G., Germany

SO Ger., 4 pp.

PI DE 4217552 C1 19930819 DE 1992-4217552 19920527

GB 2267365 A1 19931201 GB 1993-10453 19930520

PRAI DE 1992-4217552 19920527

AB The **exhaust** gases are monitored using a **NH3** sensor to allow interruption of **NH3** or **NH3** precursor flow when the **NH3** concn. exceeds a set limit. A second **NH3** sensor is used to **monitor** the **NH3 adsorbed** on the **catalyst** to **det.** when **NH3** addn. needs to be resumed. The method is simple and efficient, allows optimal use of catalyst capacity, and prevents **NH3** breakthrough.

L8 ANSWER 66 OF 155 CA COPYRIGHT 2003 ACS
 AN 118:153454 CA
 TI Apparatus and method for removing nitrogen oxides
 IN Shibahara, Atsushi; Yoshida, Tadashi; Kobayashi, Tomoji
 PA Niigata Engineering Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 7 pp.
 PI JP 04346819 A2 19921202 JP 1991-146529 19910523
 PRAI JP 1991-146529 19910523
 AB The app. has a catalytic reactor for treating **exhaust** gas from internal-combustion engine, means for supplying NH₃ to the reactor, sensor for **monitoring** the **load** of the engine, and a controlling device; where the device calcs. a required amt. of NH₃ for the reactor to remove **NO_x** corresponding to the **load** change of the engine (including start up) **monitored** by the sensor, the amt. of **NH₃ absorbed** by the **catalyst** corresponding to the calcd. required NH₃ amt., and a supplying amt. of NH₃ for **NO_x** removal cor. for the absorption amt., and sends a control signal corresponding to the supplying amt. to the NH₃-supplying means. **NO_x** is removed from **exhaust** gas by properly controlling the NH₃-supplying amt. in this app.

L8 ANSWER 68 OF 155 CA COPYRIGHT 2003 ACS
 AN 118:131000 CA
 TI Method for monitoring catalyst for nitrogen oxide removal from **flue** gas from thermal powder stations
 IN Ogawa, Keizo; Kamakura, Hiroki; Nakajima, Eisaku; Soejima, Yukihiro; Koga, Takenobu; Fujiwara, Hiroki
 PA Kyushu Electric Power Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 4 pp.
 PI JP 04338217 A2 19921125 JP 1991-109136 19910514
 PRAI JP 1991-109136 19910514
 AB A device, contg. several catalyst layers for removing **NO_x** from **flue** gas, has several openings between the **catalyst** layers to accept means for **monitoring concns.** of **NO_x** and **NH₃** in the **flue** gas at predetd. time intervals, and the **NO_x**-removing efficiency and load of each catalyst layer and the whole device are calcd. from the **monitored concns.**

L8 ANSWER 84 OF 155 CA COPYRIGHT 2003 ACS
 AN 110:142218 CA
 TI Dealuminated mordenites as catalysts in the oxidation and **decomposition** of nitric oxide and in the **decomposition** of nitrogen dioxide: characterization and activities
 AU Odenbrand, C. U. Ingemar; Andersson, Lars A. H.; Brandin, Jan G. M.; Jaeraas, Sven
 CS Inst. Sci. Technol., Lund Univ., Lund, S-221 00, Swed.
 SO Catalysis Today (1989), 4(2), 155-72
 AB Dealuminated mordenites were investigated in order to illustrate the effect of the Al content on catalytic and physicochem. characteristics. Chem. and phys. characterizations of the catalysts were performed by x-ray diffraction, chem. **anal.**, **absorption** and desorption studies, and IR **measurements**. The catalysts were tested in the oxidn. of **NO** and in the **decompn.** of **NO₂** and **NO**. Activities for the mordenites in both the oxidn. of **NO** and the **decompn.** of **NO₂** were strongly dependent on the Al content of the catalyst. The highest activities were obtained for the original unleached catalyst. No direct **decompn.** of **NO** to **N₂** and **O₂** was obsd. at 420-690 K. Adsorbed amts. of **NO** and **NH₃** showed a regular decrease with the amt. of Al in the catalyst. The activities in the oxidn. of **NO** and the **decompn.** of **NO₂** were correlated to the amt. of **NO+ adsorbed** on the catalyst, which was **detected** by IR.

L8 ANSWER 90 OF 155 CA COPYRIGHT 2003 ACS
 AN 108:191943 CA
 TI Selective catalytic reduction of nitrogen oxides - an original design
 AU Kotter, Michael; Lintz, Hans Guenther
 CS Inst. Chem. Verfahrenstech., Univ. (TH) Karlsruhe, Baden, Fed. Rep. Ger.
 SO Entropie (1987), 23(137-138), 109-16
 LA French
 AB NOx removal from flue gases in a Ljungstroem heat exchanger with catalyst-coated heat exchange surfaces is proposed. Lab. studies showed that efficiency of this treatment is related to the **NH3-storing capacity** of the **catalyst** layer and that it can be improved by exposure of the catalyst alternately to flue gas and air.

L8 ANSWER 122 OF 155 CA COPYRIGHT 2003 ACS
 AN 86:123688 CA
 TI Algorithm for optimal control of the catalytic oxidation of ammonia by an indirect parameter
 AU Atróshchenko, V. I.; Galochkina, M. M.
 CS USSR
 SO Pribery i Sistemy Upravleniya (1976), 21(10), 10-11
 LA Russian
 AB The optimization of NH3 **catalytic** oxidn. consists of **detg.** the **load** and the inlet **concn.** of **NH3** in the gas mixt. at which the conversion to **NO** will be max. for given process conditions and catalyst state. The problem is solved in stages. In the 1st stage, the optimum values are obtained for the inlet **vol.** and **concn.** of **NH3** and the reaction temp. at const. **catalyst** activity. In the 2nd stage, the above optimum regime is realized under changing conditions during the progress of the reaction. A block diagram of the algorithm is presented.

L8 ANSWER 125 OF 155 CA COPYRIGHT 2003 ACS
 AN 86:78091 CA
 TI Method and apparatus for **determining** ammonia **concentration** of gas
 IN Matsuda, Shimpei; Nakajima, Fumito; Takeuchi, Masato; Uno, Shigeo; Kato, Akira; Imanari, Makoto; Watanabe, Yoshihisa
 PA Hitachi, Ltd., Japan; Mitsubishi Petrochemical Co., Ltd.; Babcock-Hitachi K.K.
 SO U.S., 11 pp.
 PI US 3977836 A 19760831 US 1975-631198 19751112
 PRAI JP 1974-129943 19741113
 AB NH3 and **NOx** are brought into contact with a catalyst under sp. conditions to form N and H2O, where changes in **concn.** of **NOx** are **measured** and converted to the desired NH3 amts. Concns. of **NOx** of the gas before and after the contact with the **catalyst** are **detd.**; and an **NH3 concn.** of the gas is calcd. by converting the difference between the concns. of **NOx** to NH3 concn. Concn. in the gas passing through the catalyst bed must be kept always higher (1.5-2 times of **NOx** concn.). The catalyst contains ≥1 oxides of Ti, V, Fe, Cu, Mo, Sn, and W. The app. comprises a piping for dividing a gas contg. NH3 and **NOx** in an amt. more than necessary for oxidizing the NH3 into 2 streams, a catalyst vessel, cells for analyzing **NOx**, an irradsn. source, and photoelec. sensor.

=> log y

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